TRANSLATION ACES INC.
29 Broadway ◆ Suite 2301
New York. NY 10006-3279
Tel. (212) 269-4660 ◆ Fax (212) 269-4662

[Translation from Japanese]

(19) Japan Patent Office

(12) Official Gazette of Unexamined Patent Applications (A)

(11) Patent Application Publication No: **7-274894**

(43) Patent Application Publication Date: October 24, 1995

(51) Int'l. Cl.[6]	Identification Code	Internal File Nos.	FI	Tech. Ind.
A 23 L 01/30	B			
A 23 G 01/00				
A 61 K 35/78	ACL C	8217-4C		

Request for Examination: Not yet received

Number of Claims: 3

Total Pages: 5

(21) Patent Application No: 6-64717

(22) Patent Application Date: April 1, 1994

(71) Applicant: 000006091
Meiji Seika Kaisha Ltd.
2-4-16, Kyobashi, Chuo-ku, Tokyo

(72) Inventor: Naomi OSAKABE
Meiji Seika Kaisha Biological Sciences Research Center
5-3-1, Chiyoda, Sakato-shi, Saitama-ken

(72) Inventor: Megumi YAMAGISHI
Meiji Seika Kaisha Biological Sciences Research Center
5-3-1, Chiyoda, Sakato-shi, Saitama-ken

(72) Inventor: Chiaki SANHONGI
Meiji Seika Kaisha Biological Sciences Research Center
5-3-1, Chiyoda, Sakato-shi, Saitama-ken

(72) Inventor: Toshio TAKIZAWA
Meiji Seika Kaisha Biological Sciences Research Center
5-3-1, Chiyoda, Sakato-shi, Saitama-ken

(72) Inventor: Takashi ADACHI
Meiji Seika Kaisha Biological Sciences Research Center
5-3-1, Chiyoda, Sakato-shi, Saitama-ken

---

(54) [Title of Invention] Food or Beverage Product for Preventing Gastric Ulcers

(57) [Abstract]

[Purpose] The present invention pertains to a cacao bean food or beverage product that is safe and effective for preventing gastric ulcers.

[Solution] A food or beverage product for preventing gastric ulcers containing an antioxidant substance extracted from cacao beans using hot water or ethanol.

[Claims]

[Claim 1] A food or beverage product for preventing gastric ulcers containing an antioxidant substance extracted from cacao beans using hot water or ethanol.

[Claim 2] Food or beverage product for preventing gastric ulcers according to Claim 1, wherein the antioxidant substance is extracted from cacao beans using hot water at a temperature above 80°C or ethanol with a water-to-ethanol ratio of 60:40 to 0:100.

[Claim 3] Food or beverage product for preventing gastric ulcers according to Claim 1, wherein the antioxidant substance is a crude polyphenol obtained by refining the hot water extract or ethanol extract.

[Detailed Description of the Invention]

[0001]

[Industrial Field of Application] The present invention relates to a food or beverage product for preventing gastric ulcers containing a natural antioxidant substance, and more specifically to a food or beverage product for preventing gastric ulcers containing an antioxidant substance as the active ingredient, which is extracted from cacao beans.

[0002]

[Prior Art and Problem Solved by the Invention] The stress-induced peptic ulcer is a common illness among adults in modern society. Several kinds of drugs have been developed to treat the different types of ulcer. These include histamine receptor antagonizing drugs, anticholinergic drugs, antipepsin drugs and antacids such as sodium hydrogen carbonates.

[0003] However, these drug treatments are unsatisfactory because of problems with side effects, recurrence after the drug has worn off, and production costs. In order to solve the problems associated with these drugs, researchers have sought to develop a food or beverage product that is effective at preventing ulcers.

[0004]

[Means of Solving the Problem] The present inventors conducted extensive research to solve the problems associated with the prior art. They were the first to confirm that an antioxidant substance in cacao beans, the main ingredient in chocolate and cocoa, was effective at preventing gastric ulcers. The present invention is based on this discovery. In other words, the present invention provides a food or beverage product

for preventing gastric ulcers that contains an antioxidant substance found in cacao beans.

[0005] The antioxidant substance in the present invention is extracted from cacao beans using hot water or ethanol, which is not harmful to humans. The cacao beans can be used in a variety of forms but delipidated cacao mass is preferred because the extract can be powdered. The shells are removed from the cacao beans to obtain the cacao mass and the oils are then extracted from the cacao mass to obtain the delipidated cacao mass. The oils should be removed using a well-known method.

[0006] If water is used in the extraction process, 500 ppw water should be used per 100 ppw of delipidated cacao mass. The water should be heated to 80-100°C, preferably to 100°C, and the cacao mass should then be processed for several minutes to an hour, preferably 20-40 minutes. The filtered liquid extract is concentrated under reduced pressure. The concentrated liquid can then be freeze-dried or spray-dried to obtain a powder.

[0007] If ethanol is used in the extraction process, 500 ppw ethanol aqueous solution should be used per 100 ppw of delipidated cacao mass. The ratio of water to ethanol should range between 60:40 and 0:100, preferably between 30:70 and 0:100. The mixture should be stirred at room temperature for between several hours and 48 hours, preferably for 24 hours. After the ethanol contained in the filtered liquid extract has been removed under reduced pressure, the liquid extract can be freeze-dried or spray-dried to obtain a powder. The extracted antioxidant substance can be used in

concentrated liquid form or powdered form depending on the food product. The extract can also be refined using chromatography for use in food products.

[0008] The inhibitory effect of super oxide dismutase (SOD) and catalase on lesions of the gastric mucosa has recently been reported. It has also become clear that these contribute directly to active oxygen and lipid peroxide reactions in these pathologies. The present inventors have already confirmed the presence of an antioxidant substance with a strong SOD effect in cacao beans, the main ingredient in chocolate and cocoa.

[0009] In light of these discoveries, the present inventors conducted extensive research on the effects of this antioxidant substance on rats. They were the first to discover the superior antiulcer effect of this antioxidant substance using alcohol-induced ulcer models. The gastric ulcer-preventing food or beverage product of the present invention contains an antioxidant substance found in cacao beans. Because this substance is non-toxic, there are no limits on the amount that can be ingested. However, when this substance is used in a food or beverage product for preventing ulcers, 1-1000 mg of extract per kg of body weight per day, preferably 10-500 mg per kg of body weight per day, is appropriate.

[0010] The food or beverage product in the present invention can of course be a chocolate or cocoa product whose main ingredient is cacao beans. However, the food or beverage product can also be a candy, milk product, yogurt product or starch-based product such as bread, biscuits and noodles if the extract from the present invention

can be added. The ingredients and production method depend on the characteristics and purpose of the food or beverage product.

[0011] Cacao beans have been used in food and beverage products since the turn of the century. The fact that large amounts continue to be consumed around the world attests to the safety of the cacao bean. Therefore, the present invention provides a food or beverage product containing an antioxidant substance that is both safe and effective against ulcers.

[0012]

[Working Examples] The following is a more detailed explanation of the present invention with reference to working examples. The present invention is by no means restricted to these working examples.

[0013] Working Example 1

Method For Preparing a Cacao Mass Antioxidant Substance Using Chromatography

Vitamin E and epicatechin are the only two substances in cacao beans that have been reported to have the possibility of antioxidant properties. There have been numerous physiological chemistry studies on Vitamin E because it is a common ingredient in food products. However, epicatechin has not been studied because it is unique to cacao beans.

[0014] The extract was refined using open column chromatography to increase the amount of epicatechin and analogues. The solvent extraction method and layer separation method had been used in the past, but chromatography using the Sephadex LH-20, which is the method most often used these days, was selected as the refining method.

[0015] Purified water (1000 g) was added to delipidated cacao mass (200 mg) and liquid extract was extracted using the autoclave process (127°C, 30 min.). The liquid extract was then filtered, concentrated under reduced pressure, and processed in a centrifuge. The supernatant was applied to the Sephadex LH-20 and eluted in a purified water and acetone mixture (water-to-acetone ratio = 70:30) to obtain active fractions from the elution. A summary of the refining method is shown in Fig. 1. The active fractions were then freeze-dried for use in the experiment.

[0016] Working Example 2

Inhibitory Effect on Experimental Alcohol-Induced Ulcers

It is well known that the administration of ethanol to the stomach cavity causes blood congestion in the collecting venules and damage to the gastric mucosa, but many parts of the action mechanism are not yet understood.

[0017] It has recently been hypothesized that active oxygen contributes to the cause of the disease because it has been reported that super oxides are generated by the cells in the gastric mucosa in direct response to ethanol and that these super oxides permeate the neutrophilic focus. The cacao extract obtained in the present invention has a strong antioxidant effect. Because it was hypothesized that the cacao extract

would thus have an effect on the occurrence of experimental alcohol-induced ulcers, the effect was confirmed using the following method.

[0018] Seven groups of 10 male Sprague-Dawley rats (body weight: 240-310 g) that had not eaten in 24 hours were orally administered the test substances suspended in 0.5% CMC (500 mg/5 ml/kg). Thirty minutes later, the rats were administered ethanol (5 ml/kg). After sixty minutes, the rats were anesthetized with ether and dissected. The stomachs were removed and fixed in 1% formalin. The stomachs were then cut open in the area of greater curvature and the area of the injury in the gastric region was measured using a multipurpose high-speed image analyzer.

[0019] The test substances were a substance extracted from delipidated cacao mass using hot water (100°C), a substance extracted from delipidated cacao mass using 80% ethanol, the crude polyphenol obtained in Working Example 1, α-tocopherol, cimetidine and sucralfate. The control group was orally administered 0.5% CMC without any additives. The rats in the control group were otherwise treated in the same manner.

[0020] The results of the experiment indicate the inhibitory rate of the substances in terms of the relative size of the area of injury compared to the control group. As shown in Fig. 2, the inhibitory percentage of the hot water extract from the delipidated cacao mass relative to the control group was 45%, the inhibitory percentage of the 80% ethanol extract from the delipidated cacao mass relative to the control group was 58%, and the inhibitory percentage of the crude polyphenol fraction relative to the control group was 83%. The inhibitory percentage of the α-tocopherol relative to the control

group was 40%, inhibitory percentage of the cimetidine relative to the control group was 73%, and inhibitory percentage of the sucralfate relative to the control group was 90%. From these results, it is clear that the cacao mass extracts compare favorably to the antiulcer drugs.

[0021] Working Example 3

Tablets were prepared according to the usual method with the extract obtained using hot water (100°C) as well as the following ingredients.

Granulated Sugar	85 ppw
Concentrated Fruit Juice	5 ppw
Citric Acid	6 ppw
Flavoring	2 ppw
Hot Water Extract	1 ppw
Gelatin	1 ppw

[0022] Working Example 4

Cakes were prepared according to the usual method with the extract obtained using 80% ethanol as well as the following ingredients.

Wheat Flour	52 ppw
Refined Sugar	3 ppw
Condensed Milk	4 ppw
Salt-Free Butter	3 ppw
Egg	3 ppw
Refined Salt	1 ppw
Yeast	1.5 ppw
Water	31.5 ppw
80% Ethanol Extract	1 ppw

[0023] Working Example 5

A cocoa drink was prepared according to the usual method with the crude polyphenol obtained in Working Example 1 as well as the following ingredients.

Crude Polyphenol	0.5 ppw
Cocoa Powder	2 ppw
Sugar	4.5 ppw
Non-Fat Milk	0.5 ppw
Emulsifier	0.1 ppw
Table Salt	0.05 ppw
Vanilla Flavor	0.05 ppw
Purified Water	92.3 ppw

[0024]

[Effect of the Invention] As explained above, the present invention is able to provide a food or beverage product that contains an antioxidant substance that is safe and effective at preventing gastric ulcers. This substance is extracted from cacao beans, which have been used in food products for over a century. In other words, the food or beverage product of the present invention is an effective means of preventing gastric ulcers, which are a common illness among adults in modern society. The present invention also solves problems associated with current drug treatments such as side-effects and the recurrence of symptoms once the medication wears off.

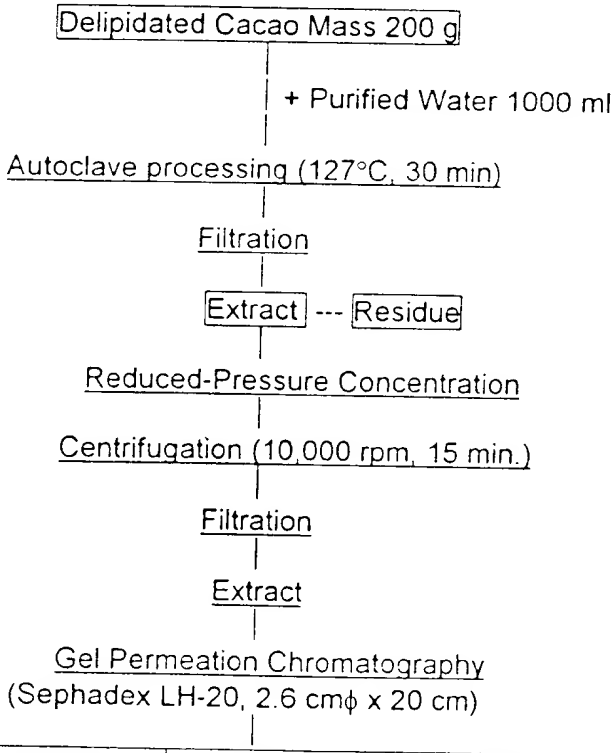
[Brief Explanation of the Drawings]

[Fig. 1] Chart used to illustrate the method for refining the delipidated cacao mass extract

[Fig. 2] Graph showing the inhibitory action of the antioxidant component from the delipidated cacao mass

[Fig. 1]

Refinement Method for the Antioxidant Component from the Delipidated Cacao Mass



Water: Acetone (300 ml)	85:15	70:30	40:60	0:100
Amount (g)	0.56	0.96	0.10	0.05
Recovery (%)	0.28	0.48	0.05	0.025
	Fraction 1	Fraction 2	Fraction 3	Fraction 4

[Fig. 2]

Effect on Experimental Alcohol-Induced Ulcers: Inhibitory Percentage (%) Compared to the Control Group

[Graph captions, bottom, left to right:]

Hot Water Extract From Delipidated Cacao Mass

80% Ethanol Extract From Cacao Mass

Crude Polyphenol From Cacao Mass

α-Tocopherol

Cimetidine

Sucralfate